

**INITIAL STATEMENT OF REASONS
TITLE 27, CALIFORNIA CODE OF REGULATIONS**

PROPOSED AMENDMENT TO

**SECTION 25805(b) MAXIMUM ALLOWABLE DOSE LEVEL FOR
BISPHENOL A**

**SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986
PROPOSITION 65**

**PURPOSE AND BACKGROUND OF PROPOSED AMENDMENTS OF
REGULATION**

This proposed regulatory amendment is to adopt a Maximum Allowable Dose Level (MADL) for bisphenol A (BPA) under Proposition 65¹ in Title 27, California Code of Regulations, section 25805(b)². The proposed level of 290 micrograms per day was derived using scientific methods outlined in Section 25803.

Note: Bisphenol A is currently being considered for listing via the authoritative bodies listing mechanism as known to cause reproductive toxicity. In the event that the chemical is not listed for reproductive toxicity, the Office of Environmental Health Hazard Assessment (OEHHA) will not proceed with the adoption of this regulation. Given the public interest in this chemical, OEHHA is proposing this MADL at this time to assist the public in assessing the potential impact of the listing.

Proposition 65 was enacted as a voters' initiative on November 4, 1986. OEHHA is the lead state entity responsible for the implementation of Proposition 65.³ OEHHA has the authority to adopt and amend regulations to further the purposes of the Act.⁴ The Act requires businesses to provide a warning when they cause an exposure to a chemical listed as known to cause cancer or reproductive toxicity. The Act also prohibits the discharge of listed chemicals to sources of drinking water.

¹ The Safe Drinking Water and Toxic Enforcement Act of 1986, codified at Health and Safety Code section 25249.5 et. seq., hereafter referred to as "Proposition 65" or "The Act".

² All subsequent citations are to Title 27, California Code of Regulations, unless otherwise noted.

³ Title 27, California Code of Regulations, section 25102(o).

⁴ Health and Safety Code, section 25249.12(a).

Bisphenol A is under consideration for addition to the Proposition 65 list as known to the state to cause reproductive toxicity based on findings of developmental toxicity by the National Toxicology Program (NTP), a Proposition 65 authoritative body⁵. The NTP findings were made in a final report by the NTP's Center for the Evaluation of Risks to Human Reproduction⁶.

STUDY SELECTION

NTP identified eight studies specifically as the basis for the conclusion that there is clear evidence of adverse developmental effects at “high” doses of bisphenol A in the form of fetal death, decreased litter size, or decreased number of live pups per litter in rats and mice, reduced growth in rats and mice, and delayed puberty in male mice, male rats and female rats. NTP defined “high” doses of bisphenol A to be greater than 5 milligrams of BPA per kilogram of body weight per day (mg/kg-day). OEHA conducted comprehensive searches of the scientific literature for additional “high” dose studies not considered by the authoritative body, and published subsequent to the NTP review of the compound. No such additional studies were found.

Animal Studies

Seven⁷ of the eight animal studies identified by NTP as providing clear evidence of developmental toxicity at “high doses” included a prenatal exposure

⁵ Title 27, California Code of Regulations, section 25306(l)(3).

⁶ National Toxicology Program – Center for the Evaluation of Risks to Human Reproduction (NTP-CERHR, 2008). *NTP-CERHR Monograph on the Potential Human Reproductive and Developmental Effects of Bisphenol A*. NIH Publication No. 08-5994.

⁷ 1) Kim JC, Shin HC, Cha SW, Koh WS, Chung MK, Han SS (2001) Evaluation of developmental toxicity in rats exposed to the environmental estrogen bisphenol A during pregnancy. *Life Sci.* 69: 2611 – 2625; 2) Morrissey RE, George JD, Price CJ, Tyl RW, Marr MC, Kimmel CA (1987) The Developmental Toxicity of bisphenol A in Rats and Mice. *Fundam Appl Toxicol.* 8: 571 – 582; 3) NTP (1985) Bisphenol A: reproduction and fertility assessment in CD-1 mice when administered in the feed. NTP-85-192. Research Triangle Park, NC; 4) Tinwell H, Haseman J, Lefevre PA, Wallis N, Ashby J (2002) Normal sexual development of two strains of rat exposed *in utero* to low doses of bisphenol A. *Toxicol Sci.* 68:339 – 348; 5) Tyl RW, Myers CB, Marr MC, Sloan CS, Castillo NP, Veselica MM, Seely JC, Dimond SS, Van Miller JP, Shiotsuka RN, Beyer D, Hentges SG, Waechter JM, Jr. (2008) Two-generation reproductive toxicity study of dietary bisphenol A (Bisphenol A) in CD-1(R) (Swiss) mice. *Toxicol Sci.* 104:362 – 384; 6) Tyl R, Myers CB, Marr MC. Abbreviated one-generation study of dietary bisphenol A (Bisphenol A) in CD-1® (Swiss) mice (2002a). In. Research Triangle Park, NC: RTI (sponsored by the Society of the Plastics Industry, Inc.); 7) Tyl RW, Myers CB, Marr MC, Thomas BF, Keimowitz AR, Brine DR, Veselica MM, Fail PA, Chang TY, Seely JC, Joiner RL, Butala JH, Dimond SS, Cagen SZ, Shiotsuka RN, Stropp GD, Waechter JM (2002b) Three-generation reproductive toxicity study of dietary bisphenol A in CD Sprague-Dawley rats. *Toxicol Sci.* 68:121 – 146.

component. The most sensitive of these seven studies were by Tinwall et al. (2002), Tyl et al. (2002b) and Tyl et al. (2008). These studies are of sufficient quality to serve as the basis for the MADL.⁸

The studies by Tyl et al. (2002b) and Tyl et al. (2008) each provide a no observable effect level (NOEL) of 5 mg/kg-day. This dose is also at the top of the range of doses defined as “low” by NTP. The lowest dose level in the study by Tinwell et al. (2002) that produced observable effects was 50 mg/kg-day. The study had widely spaced doses (0.02, 0.1 and 50 mg/kg-day). In this study, 0.1 mg/kg-day was the highest dose without observable effects. Thus the highest NOEL that did not exceed the lowest observable effect levels in these three studies was 5 mg/kg-day. Of note also, if the lowest observable effect level (LOEL) from the Tinwell et al. study was divided by 10 per Section 25803(a)(8), it would yield a NOEL of 5 mg/kg-day, the same level as the empirical NOEL from the studies by Tyl et al. (2002b; 2008).

For purposes of Proposition 65, these three studies are the most sensitive studies deemed to be of sufficient quality as specified in Section 25803 (a)(7), for exposures to bisphenol A.

MADL CALCULATION

The following calculations were performed in accordance with Section 25803 to derive the MADL for bisphenol A:

- The studies by Tyl et al. (2002b; 2008) in rats and mice provided a NOEL of 5 mg/kg-day.
- Calculation of the NOEL for a 58 kg woman:
5 mg/kg-day x 58 kg = 290 mg/day.
- The MADL is derived by dividing the NOEL by one thousand (Section 25801(b)(1)). Thus, the adjusted NOEL was divided by 1,000 to obtain the MADL.

$$\text{MADL} = 290 \text{ mg/day} \div 1,000 = \textbf{290 micrograms/day}$$

⁸ Section 25803(a)(5).

PROPOSED REGULATORY AMENDMENT

The proposed change to Section 25805(b) is provided below in underline:

Chemical name	Level (micrograms per day)
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<u>Bisphenol A (BPA)</u>	<u>290</u>
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PROBLEM BEING ADDRESSED BY THIS PROPOSED RULEMAKING

Proposition 65 does not provide guidance regarding how to determine whether a warning is required or a discharge is prohibited. OEHHA is the implementing agency for Proposition 65 and has the resources and expertise to examine the scientific literature and calculate a level of exposure that does not require a warning or trigger the discharge prohibition.

NECESSITY

This proposed regulatory amendment would adopt a MADL that conforms with the Proposition 65 implementing regulations and reflects the currently available scientific knowledge about BPA. The MADL provides assurance to the regulated community that exposures or discharges below it are considered not to pose a significant risk of reproductive harm. Exposures at or below the MADL are exempt from the warning and discharge requirements of Proposition 65.⁹

TECHNICAL, THEORETICAL, AND/OR EMPIRICAL STUDIES, REPORTS, OR DOCUMENTS

The studies by Tinwall et al (2002),¹⁰ Tyl et al. (2002b)¹¹ and Tyl et al. (2008)¹², and the NTP's Center for the Evaluation of Risks to Human Reproduction

⁹ Health and Safety Code sections 25249.9(b) and 25249.10(c)

¹⁰ Tinwell H, Haseman J, Lefevre PA, Wallis N, Ashby J (2002) Normal sexual development of two strains of rat exposed *in utero* to low doses of bisphenol A. *Toxicol Sci.* 68:339 – 348.

¹¹ Tyl RW, Myers CB, Marr MC, Thomas BF, Keimowitz AR, Brine DR, Veselica MM, Fail PA, Chang TY, Seely JC, Joiner RL, Butala JH, Dimond SS, Cagen SZ, Shiotsuka RN, Stropp GD, Waechter JM (2002b) Three-generation reproductive toxicity study of dietary bisphenol A in CD Sprague-Dawley rats. *Toxicol Sci.* 68:121 – 146.

¹² Tyl RW, Myers CB, Marr MC, Sloan CS, Castillo NP, Veselica MM, Seely JC, Dimond SS, Van Miller JP, Shiotsuka RN, Beyer D, Hentges SG, Waechter JM, Jr. (2008) Two-generation repro-

Monograph on the Potential Human Reproductive and Developmental Effects of Bisphenol A, were relied upon for the proposed amendment to Section 25805(b). These documents provide the basis for calculating the MADL for the chemical. A copy of each document will be included in the regulatory file for this action, and are available upon request from the contact person listed below.

REASONABLE ALTERNATIVES TO THE REGULATION AND THE AGENCY'S REASONS FOR REJECTING THOSE ALTERNATIVES

The MADL provides a safe harbor level that aids businesses in determining if they are complying with the law. The alternative to the amendment to Section 25805(b) would be to not adopt a MADL for the chemical or to promulgate it in a different subsection of Section 25705. Failure to adopt a MADL would leave the business community without a safe harbor level to assist them in determining compliance with Proposition 65.

REASONABLE ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESSES

OEHHA is not aware of any cost impacts that small businesses would incur in reasonable compliance with the proposed action. In addition, Proposition 65 is limited by its terms to businesses with 10 or more employees (Health and Safety Code, section 25249.11(b)), so it has no effect on very small businesses.

EVIDENCE SUPPORTING FINDING OF NO SIGNIFICANT ADVERSE ECONOMIC IMPACT ON BUSINESS

Because the proposed MADL provides a non-mandatory safe harbor level for businesses to use when determining compliance with Proposition 65, OEHHA does not anticipate that the regulation will have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states.

ductive toxicity study of dietary bisphenol A (Bisphenol A) in CD-1(R) (Swiss) mice. *Toxicol Sci.* 104:362 – 384;

DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS CONTAINED IN THE CODE OF FEDERAL REGULATIONS

Proposition 65 is a California law that has no federal counterpart. There are no federal regulations addressing the same issues and, thus, there is no duplication or conflict with federal regulations.

ECONOMIC IMPACT ANALYSIS

Gov. Code section 11346.3(b)

It is not possible to quantify any monetary impact for this proposed regulation given that its use is entirely voluntary and it only provides compliance assistance for businesses subject to the Act.

Impact on the Creation, Elimination, or Expansion of Jobs/Businesses in

California: This regulatory proposal will not affect the creation or elimination of jobs within the State of California. Proposition 65 requires businesses with ten or more employees to provide warnings when they expose people to chemicals that are known to cause cancer or reproductive harm. The law also prohibits the discharge of listed chemicals into sources of drinking water. If BPA is eventually listed under Proposition 65, businesses that manufacture, distribute or sell products with BPA in the state would have to provide a warning if their product or activity exposes the public or employees to this chemical.

Benefits of the Proposed Regulation: The MADL provides a “safe harbor” level that aids businesses in determining if they are complying with the law. Some businesses may not be able to afford the expense of establishing a MADL and therefore may be exposed to litigation for a failure to warn or for a prohibited discharge of the listed chemical. Adopting this regulation will save these businesses those expenses and may reduce litigation costs. By providing a safe harbor level, this regulatory proposal does not require, but may encourage, businesses to lower the amount of the listed chemical in their product to a level that does not cause a significant exposure, thereby providing a public health benefit to Californians.

Problem being addressed by this proposed rulemaking: Proposition 65 does not provide specific guidance regarding how to determine whether a warning is required or a discharge is prohibited. OEHHA is the implementing agency for Proposition 65 and has the resources and expertise to examine the scientific literature and calculate a level of exposure that does not require a warning or trigger the discharge prohibition.

How the proposed regulation addresses the problem: The proposed regulation would adopt a specific regulatory level for a listed chemical to provide compliance assistance for businesses that are subject to the requirements of the Act. While OEHHA is not required to adopt such levels, adopting them provides a “safe harbor” for businesses and provides certainty that they are complying

with the law if the exposures or discharges they cause are below the established level.

Reasonable alternatives to the proposed regulation: OEHHA determined that the only alternative to the proposed regulation would be to not adopt a MADL for this chemical. This alternative was rejected because it would fail to provide businesses with the certainty that the MADL can provide.

Results: By providing a MADL, this regulatory proposal spares businesses the expense of calculating their own MADL and may also enable them to reduce or avoid litigation costs. In addition, the MADL does not require, but may encourage, businesses to lower the amount of the listed chemical in their product to a level that does not cause a significant exposure, thereby providing a public health benefit to Californians.